<u>What is claimed is:</u>

1. An apparatus comprising:

a support structure;

an actuator operably associated with the support structure for proportionally driving the support structure in response to an electrical activation of the actuator; and

means, interacting with the support structure, for compensating for different coefficients of thermal expansion of materials used in the support structure and the actuator in response to variations in temperature over a predetermined operating temperature range.

2. The apparatus of claim 1, wherein the temperature compensating means comprises:

at least one compensation member operably associated with the support structure and spaced from the actuator, the compensation member made from a material having a different coefficient of thermal expansion relative to the support structure such that the compensation member exerts a force on the support structure in an opposite direction from any deflection force inherent in the support structure caused by a change in ambient temperature.

3. The apparatus of claim 1, wherein the temperature compensating means further comprises:

bimaterial layers forming at least a portion of the support structure and spaced from the actuator, a first material layer made from a material having a different coefficient of thermal expansion relative to a second material layer such that the bimaterial layers exert a force with respect to the support structure to deflect the support structure in an opposite direction from any deflection caused by a change in ambient temperature.

4. The apparatus of claim 1, wherein the temperature compensating means further comprises:

the support structure formed of a first material having a different coefficient of thermal expansion relative to a temperature compensating member formed of a second material such that the two different materials exert opposing forces on one another in response to changes in ambient temperature.

5. The apparatus of claim 4, wherein the opposing forces are sufficient to limit temperature-induced movement of the support structure caused by differences in the coefficients of thermal expansion of the actuator material and the support structure material to no greater than ± seven percent of total movement of the support structure.

6. The apparatus of claim 1, wherein the temperature compensating means further comprises a temperature compensating member operably connected with the support structure and spaced from the actuator extending substantially across an entire width of the support structure.

7. The apparatus of claim 1, wherein the temperature compensating means further comprises a temperature compensating member operably connected with the support structure and located on an outer surface of the support structure.

8. The apparatus of claim 1, wherein the temperature compensating means further comprises a temperature compensating member operably connected with the support structure and located on an inner surface of the support structure.

9. The apparatus of claim 1, wherein the support structure further comprises:

at least one arm portion pivotally extending from a side portion through an integrally formed hinge portion located between the side and arm portions.

10. The apparatus of claim 9, wherein the at least one arm portion folds back over the respective side portion.

11. The apparatus of claim 9, wherein the temperature compensating means comprises:

at least one compensation member operably associated with each arm of the support structure and spaced from the actuator, the compensation member made from a material having a different coefficient of thermal expansion relative to the support structure, such that the compensation member exerts a force on the support structure in an opposite direction from any deflection force inherent in the support structure and actuator caused by a change in ambient temperature.

12. The apparatus of claim 9, wherein the temperature compensating means further comprises:

bimaterial layers forming at least a portion of the at least one arm of the support structure and spaced from the actuator, a first material layer made from a material having a different coefficient of thermal expansion relative to a second material layer such that the bimaterial layers exert a force with respect to the support structure to counteract any deflection caused by a change in ambient temperature.

13. The apparatus of claim 9, wherein the temperature compensating means further comprises:

the at least one arm of the support structure formed of a first material having a different coefficient of thermal expansion relative to a temperature compensating insert associated with the at least one arm and formed of a second

material such that the two different materials exert opposing forces on one another in response to changes in ambient temperature.

14. The apparatus of claim 13, wherein the opposing forces are sufficient to limit temperature-induced movement of the at least one arm of the support structure caused by differences in the coefficient of thermal expansion of the actuator material and the support structure material to no greater than ± seven percent of total movement of the at least one arm of the support structure.

15. The apparatus of claim 9, wherein the temperature compensating means further comprises a temperature compensating member operably connected with the at least one arm of the support structure and spaced from the actuator extending substantially across an entire width of the at least one arm.

16. The apparatus of claim 9, wherein the temperature compensating means further comprises a temperature compensating member operably connected with the at least one arm of the support structure and located on an outer surface of the at least one arm.

17. The apparatus of claim 9, wherein the temperature compensating means further comprises a temperature compensating member operably connected with the at least one arm of the support structure and located on an inner surface of the at least one arm.

18. The apparatus of claim 1, wherein the support structure further comprises:

at least one arm portion having first and second outwardly extending ends with respect to an integrally formed hinge portion; and

at least one temperature compensating member located along each outwardly extending end of the at least one arm.

19. The apparatus of claim 1 further comprising:

means for preloading the actuator with a compressive force.

20. The apparatus of claim 19, wherein the preloading means further comprises:

a screw threadably engagable with a threaded aperture formed in a rigid, non-flexing web portion of the support structure, the screw adjustably transmitting a preload force to the actuator.

21. The apparatus of claim 19 further comprising:

an adjustment seat for focusing a preload force on the actuator, the adjustment seat having a curved surface for distributing the preload force to the actuator as only a compressive force.

22. A method for designing a piezoelectric actuator comprising the steps of:

defining design requirements of an application;

creating a finite element model of a piezoelectric actuator with a design tool for finite element analysis;

selecting a temperature compensating insert material;

performing finite element analysis on the finite element model;

comparing results of the finite element analysis with the design requirements; and

if the design requirements are not met, modifying the finite element model in response to comparing step and repeating the selecting, performing, and

comparing steps until the results of the finite element analysis meet the design requirements.

23. The method of claim 22 further comprising the steps of:

determining whether the finite element model can be manufactured at a predetermined cost value; and

repeating the selecting, performing, comparing, and determining steps until the finite element model meets the predetermined cost value.